ameter. The axis of the wire of a ring is in a plane; in other words, the rings are flat. Each of these rings has soldered to it a thin wire along a diamter and raised above the plane of the ring. On this wire is cemented a platform of thin metal. These rings are highly polished and are chemically clean.

On loading one of these floating rings, by gradually adding weights on its platform, the ring sinks deeper and deeper below the general surface of the water, till, finally, it breaks through the depresssed surface. On the form of this depressed surface (which I have plotted) depends the amount of weight per centimeter of circumference of the ring, required for the ring to break through the surface of the water. This weight, in the cases of the rings mentioned, is, on the average, 0.155 grams per centimeter, or about double the surface tension of water; because tangents to the depressed surface of the water, at the point where the rupture occurs, are vertical.

In the present stage of the research I am inclined to hold the opinion that the flotation of metals and of glass depends on a film of air which is condensed on their surfaces. The following experiments seem to sustain this opinion. If a ring made of platinum wire $\frac{4}{10}$ millimeter thick, which readily floats on water, is heated to redness and as soon as cold is placed on water it sinks. Also, when withdrawn from the water and wiped dry it again sinks when placed on the water; but after the same dried ring remains about a quarter of an hour exposed to the air then it will float. If the platinum ring, after having been heated to redness, remains in the air about a half hour and then is placed on the water it floats.

Glass behaves in a similar manner to platinum. If a rod of glass, recently drawn out in a spirit flame and just cold, is placed on water it sinks. After a freshly made rod has remained exposed to the air about a quarter of an hour it will float. If a recently made glass rod which has just sunk in water be withdrawn, wiped dry and exposed to the air for a quarter of a hour, it will float. The glass rods used in these experiments are one millimeter thick and four to five centimeters long.

Under certain conditions the ratio of the weights required to make a platinum ring break through the surface of water and through the surface of another liquid is the ratio of the surface tension of water and that of the liquid. This ratio is 1 : 1.09 in the case of water and a solution of chloride of sodium of density 1.2. Taking .077 as the surface tension of water we have 1 : 1.09 = .077 : .0839. Platinum is used for such experiments because it is chemically inert to nearly all liquids.

Under certain conditions the ration of the weights required to make a platinnm ring bread through the surface of water and through the surface of another liquid is the ratio of the surface tension of water and that of the liquid. This ratio is 1 : 1.09 in the case of water and a solution of chloride of sodium of density 1.2. Taking .077 as the surface tension of water we have 1 : 1.09 = .077 : .0849. Platinum is used for such experiments because it is not oxidizable and is chemically inert to nearly all liquids.

The relation that the experiments mentioned in this article have to the surface tension of water and other liquids, and to the change of surface tension on the exposure of a liquid to the air, will be discussed in a paper containing a fuller account of facts and theory than can be given in this notice.

ALFRED M. MAYER.

MAPLEWOOD, N. J., August 21, 1896.

A GALL-MAKING COCCID IN AMERICA.

THE numerous and extraordinary galls formed by Coccidæ in Australia have long excited the interest of entomologists, but so far no gall-making coccid has been de-

scribed from America. It was, therefore, with the greatest surprise and pleasure that I detected some galls produced by a coccid, on the leaves of *Quercus wrightii* at Pinos Altos, New Mexico, on July 8th. The galls were quite abundant and are situated on the midrib on the under side of the leaf, at or near the base; their shape is something like that of a hazel-nut, but flatter on one side, with the midrib continued to form a ridge, terminating in a more or less pointed apical crest. Frequently two galls will be combined in one, in which case there are two pointed crests. On the upper side of the leaf is observed a narrow slit, opening into the cavity of the gall. The cavity of the gall is low-conical and is filled by the dark-colored female coccid.

The coccid, aside from the fact of its forming a gall, is extremely interesting. It belongs to the Idiococcinæ, a group of sixteen known species, all confined to Australia, except one in the Sandwich Islands and one in Japan. It is closely allied to the Australian forms, the larva being very like that of *Crocidocysta*, lately described by Rübsaamen, while the adult resembles certain species of Maskell's genus *Sphærococcus*. It represents, however, a new genus, which I call *Olliffiella*, in memory of Mr. Sidney Olliff, whose lamented death occurred just as he was about to publish on the gall-making coccids of Australia. The genus *Olliffiella* will be known by its adult female having very small but perfectly distinct and well-formed legs and antennæ; the antennæ resembling those of *Coccus*, six-jointed, the joints after the third successively shorter; the femora very stout, semi-circular in outline, the tarsi distinctly two-jointed (a rare but not unique character in coccids), the four digitules all filiform, with small round knobs; the skin of the dorsal surface is thickly beset with glands, mostly double or figure-of-eight. The larva after being treated with potash is reddish-purple, with the legs, antennæ and spines pale yellowish. There are rows of blunt dorsal spines, as in various Coccinæ. The anal ring has distinct but very small bristles; the antennæ are six-jointed, joints 1, 3 and 6 equal in length and longest, 2, 4 and 5 equal and shortest. The caudal setæ are fairly long. The species may be termed *Olliffiella cristicola*, n. sp. At some later date it is intended to give a detailed and illustrated account of it.

T. D. A. COCKERELL.

MESILLA, N. M., August 3, 1896.

SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION.

THE fourth annual meeting of this Society was held at Buffalo, N. Y., on August 20, 21, 22. Five sessions were held and twenty-one papers were read and discussed. On August 22d there was an excursion to Niagara Falls and Lewiston, under the auspices of the Engineer's Society of Western New York. The following were the officers of the meeting: President, Mansfield Merriman, of Lehigh University; Secretary, C. Frank Allen, of Massachusetts Institute of Technology; Treasurer, J. J. Flather, of Purdue University. The opening address of President Merriman was published in the last issue of SCIENCE.

This report of the Committee on Requirements for Admission to Engineering Colleges was presented by the Chairman, Prof. Marvin. This report gives in full the data from both engineering colleges and preparatory schools, collected by the committee during the two years of its labors, as also a careful analysis of the same with conclusions and recommendations. It was advised that a qualitative uniformity seemed desirable in regard to subjects for admission, and a list of such subjects was presented. The reports will be printed in full and opinions thereon be requested from the 350 institutions which have furnished the data.